Hawaii
Coastal Zone Management Program

Section 309 Enhancement Area Grant Program

FY- 2006-2010

Assessment and Strategy

Hawaii Coastal Zone Management Program
Office of Planning
Department of Business, Economic Development and Tourism
State of Hawaii

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Glossary of Acronyms and Terms

ADA -American with Disabilities Act
ADP - Aquaculture Development program
AELR - Annual Earthquake Estimated Losses
AFRC - Anuenue Fishery Research Center
Ahupua'a - Hawaiian geographic area designation stretching from mountains to the sea
CD - Civil Defense
CNPCP - Coastal NonPoint Pollution Control Program
CRI - Coral Reef Initiative
CWA - Clean Water Act
CWCS - Comprehensive Wildlife Conservation Strategy (Hawaii)
CZM - Coastal Zone Management
CZMA - Coastal Zone Management Act
DAR - Division of Aquatic Resources
DBEDT - Department of Business, Economic Development and Tourism (Hawaii)
DLNR - Department of Land and Natural Resources (Hawaii)
DOA - Department of Agriculture (Hawaii)
DOH - Department of Health (Hawaii)
DOT - Department of Transportation (Hawaii)
DOI - Department of the Interior (US)
EPA - Environmental Protection Agency (US)
FEMA - Federal Emergency Management Agency
FMA - Fishery Management Area
GIS - Geographic Information System
HOCC - Hawaii Ocean and Coastal Council
HRS - Hawaii Revised Statutes
MACZAC - Marine and Coastal Zone Advisory Council (Hawaii)
MLCD - Marine Life Conservation District
NAR - Natural Area Reserve
NMS - National Marine Sanctuary
MOU - Memorandum of Understanding
NOAA - National Oceanographic and Atmospheric Administration
NCMPMS - National Coastal Management Performance Measurement System
NPDES - National Pollutant Discharge Elimination System
NWIHI - Northwest Islands of Hawaii
NCMPMS - National Coastal Management Performance Measurement System
OCRM - Ocean and Coastal Resource Management
OP - Office of Planning (Hawaii)
ORMP - Ocean Resources Management Plan
PacIOOS - Pacific Integrated Ocean Observation System
RVA - Risk and Vulnerability Assessment
SMA - Shoreline Management Area
TMDL - Total Maximum Daily Load
USCG - United States Coast Guard
USDA - United States Department of Agriculture
USFWS - United States Fish and Wildlife Service
WPFMC - Western Pacific Fishery Management Council
WQ - Water Quality

Draft 309 CZM Assessment and Strategy, 2006-2010

The Office of Planning (OP), Department of Business, Economic Development and Tourism (DBEDT), State of Hawaii, the state's lead agency for the administration of the Coastal Zone Management Program in Hawaii (Hawaii's Coastal Zone Management Act of 1977 CZM, 205A,HRS) and National Coastal Zone Management Act, 1972 (CZMA); herewith submits the Section 309 Assessment and Strategy for the five year period 2006-2010.

This document is submitted to the federal office of Ocean and Coastal Resources Management (OCRM), National Oceanic and Atmospheric Administration (NOAA), As the qualifying basis for Section 309 Enhancement Grants and will identify:

(a) **Changes** that have occurred,

(b) **Problems** that have been addressed,

(c) **New issues** that have arisen,

(d) **Changes in the status** of resources, and,

(e) **Priority directions** for continuing actions and improvement of program effectiveness in each of the enhancement areas which include endangered species, special marine areas and coral reefs,

This Assessment and Strategy will also address possible application of performance criteria by which program effectiveness can be measured and monitored.

Hawaii has been a participant in the federal voluntary Section 309 granting process since 1992 and this Assessment and Strategy becomes the fourth such report submitted to describe the progress of the state's active CZM program. This Assessment and Strategy report was developed on the basis of information gained by survey questionnaires, research, interviews with resource people, public meetings and written comment.

The **format** of this 2006-2010 Assessment and Strategy Report conforms to OCRM's Section 309 "Guidance" dated March, 2005.

Introduction

It is not surprising that Hawaii, an Island Archipelago state with over 1,000 miles of tidal shoreline and millions of acres of jurisdictional ocean waters, supports an extensive and comprehensive coastal zone program consisting of progressive enhancement efforts, Hawaii's previous Section 309 assessment and Strategy (2001-2005), determined priority enhancement areas to be those of "Cumulative and Secondary Impacts, Ocean Resources, Coastal Hazards, Public Access, and Marine Debris.

A summary of the breadth of Hawaii's CZM program, and integrally related, actions in the CZM enhancement areas during the five year period, 2001-2005 follows:

Coastal Resources – Protection and Impact Mitigation:

The shoreline setback law (205A,HRS) establishing building restrictions and setbacks in coastal areas continues to be applied by all four counties in the State of Hawaii. The system has been periodically refined by new legislation, response to problems, research and innovative applications. Such an innovation has been developed by the County of Maui where the required shoreline setback is now calculated on the basis of a present coastal erosion rate applied for 50 years. The overall SMA permit process has been recently evaluated under a 309 grant and recommendations are available for its refinement.

In 2003, the Hawaii State Legislature enacted, and the Governor signed into law, a landmark statute that keeps newly accreted land along the shoreline in public ownership in perpetuity and places it in a conservation district. Previously, a private owner abutting the shoreline could claim, and acquire, such accreted land.

Ocean Resources – Protection:

Updating of the state's Ocean Resource Management Plan (ORMP**)** has been in progress and the proposed revised plan will be submitted to the 2007 session of the state legislature.

In December, 2000, the President issued an Executive Order establishing a Coral Reef Ecosystem Reserve covering the Northwest Islands of Hawaii, an archipelago of uninhabited islands within the State of Hawaii extending some 1200 miles north of the Island of Kauai. In September, 2005, Governor Linda Lingle signed an Executive Order establishing the Northwest Island region as a state marine refuge and regulating commercial fishing there. NOAA and USFWS in partnership with the State of Hawaii continues to fund research on coral reefs in the NWI chain and in other State of Hawaii waters.

Working jointly with the state's CZM program, and in fulfillment of directives from NOAA and EPA in the "Final Administrative Changes to the Coastal NonPoint Pollution Control Program Guidance for section 6217 of the Coastal Zone Act Reauthorization Amendments of 199" (October, 1998), the state's Department of Health (DOH) completed *Hawaii's Implementation Plan for Polluted Runoff Control* (July, 2000). DOH also participated with other state and federal agencies[1], under the guidance of EPA and the U.S. Department of Agriculture-National Resources Conservation Service in the production of *Hawaii's Local Action Strategy to Address Land-Based Threats to Coral Reefs* (2004). DOH also continued to annually update its designation of impaired watersheds, conduct stream assessments and conduct Total Maximum Daily Load (TMDL) studies on streams contributing pollution to the designated impaired water bodies. DOH also has prepared amendments to Hawaii's water quality standards contained in its administrative rules. The state and local governments continue to comply with, and apply, the National Pollutant Discharge Elimination System (NPDES) requirements of the Clean Water Act.

The State Department of Transportation (DOT), Harbors Division has developed and applied *Storm Water Discharge Management Plans* for three harbors on Oahu; Honolulu Harbor, Kaleloa Harbor and Kewalo Basin. The Aquatic Resources Division of the State Department of Land and Natural Resources (DLNR) has developed

[1] See endnotes

administrative rules to effectuate the state's new law controlling alien species.The DLNR is also undertaking the elimination of 60 large-capacity cesspools presently operating at some state parks and at small boat harbors.

Coastal Hazard Mitigation:

As of December 30, 2005, the State of Hawaii and each of its four counties have FEMA-approved (Federal Emergency Management Agency) Multi-Hazard Mitigation Plans in place, CZM-Hawaii contributed to the production of these plans through provision of technical and/or financial, assistance. These plans cover potential hazards arising from hurricanes, tsunamis, floods, earthquakes, wildfires, volcanic action, erosion, droughts, and landslides. On December 9, 2005, NOAA's National Weather Service declared Hawaii to be the first "Tsunamiready" state in the U.S.

Two major publications were completed and distributed in 2005 with CZM assistance, the *Hawaii Coastal Hazard Mitigation Guidebook*, *and Earthquake Hazards and Estimated Losses in the County of Hawaii.*

Marine Debris:

In each year of the period covered by the previous Assessment, the Hawaii portion of the International Coastal Cleanup, "Get the Drift and Bag It" has been conducted with satisfying results and the 2004 success is enumerated in the "Marine Debris" section of this Assessment. The results of the 2005 cleanup are yet to be tabulated.

Aquaculture:

Hawaii was successful in establishing two (its first and second ever) ocean-area leases for aquacultural activities. These activities are directed toward mass-producing of two native fish species*, moi* and *kahala*, which have been depleted by commercial fishing. A federal Task Force is favorably impressed with environmental-friendly nature of these "ocean farms." (See page 24 and footnote # 9)

Legislation:

Additional legislation contributing to the promotion and improvement of Hawaii's CZM program in the 2001-2005 period was as follows: Controls on Alien Aquatic Organisms imported by shipping, funding for Invasive Species control; Ocean leasing; enforcement of CZM and environmental laws; DLNR authority in all state lands and waters; "safe-harbor' qualifications for landowners participating in conservation measures; cruise ship sewage control.

Wetlands:

Oahu's 1,000 acre Kawai Nui Marsh was designated a Wetland of International Importance, the only such designation in the pacific region, by the Ramsar Convention an international treaty conservation group.

Public Education and Outreach:

The numerous public education and outreach activities conducted during the period 2001-2005 are referenced in the appropriate enhancement area section of this Assessment.

Enhancement Area Analysis

Priority directions for future efforts in Enhancement Areas resulted from analyses of the information gathered through survey questionnaires, interviews, public meetings and written comments, the nature and direction of current strategies, as well as the evaluation of key personnel experienced in Hawaii's CZM program.
The resulting priority directions appear below:

- Coastal Hazards
- Ocean Resources
- Special Area Management/Marine Protected Areas
- Cumulative and Secondary Impacts
- Public Access

Wetlands
Aquaculture
Threatened and Endangered Species
Marine Debris
Energy Sitings

* Priority Areas determined by evaluation results

Coastal Hazards

Coastal Hazards Characterization

1. The following chart characterizes the perceived level of risk from the indicated coastal hazard in Hawaii by questionnaire respondents.

Hazard	High Risk	Medium Risk	Low Risk
Hurricanes/Typhoons	●		
Storm Surge	●		
Flooding	●		
Shoreline Erosion		●	
Sea Level Rise			●
Subsidence			●
Earthquake		●	
Tsunami	●		
Volcanic Activity		●	

2. Explanation of changes occurring since last Assessment and quantitative measure development for assessing risks.

   a. Shoreline erosion (episodic and chronic) has dropped from high to a medium risk assessment. Public awareness about human contributions to erosion (i.e., seawalls, etc.) And regulatory and programmatic promotion of alternatives is beginning to reduce the perceived risks from this coastal event.

   b. Subsidence has dropped from medium to low risk. This event is perceived to be a relatively infrequent event and therefore considered low risk. Subsidence, in Hawaii, is also associated with volcanic activity and volcanic activity is itself a category for risk assessment in this report. Hawaii County is studying the historical frequency of subsidence in the Puna District at Kapoho on the coast.

   c. Earthquake risk has dropped from high risk to medium risk. Generally, destructive earthquake events are relatively infrequent creating the perception of medium risk. The Island of Hawaii (Hawaii County, however, rates earthquake risk as high. Hawaii County is the third highest county in the nation for earthquake risk according to FEMA's Annual Earthquake Loss Ratio (AELR) approach. (FEMA 366, Sept. 2000)

   d. Volcanic activity has been added to the list of potential hazards due to the existence of active volcanoes on the Island of Hawaii and the prolonged eruption of Kilauea for 22 years, one of the world's most active volcanoes. The underlying geology of other Islands in the State of Hawaii is also volcanic. It is for these reasons that the Multi-Hazard Mitigation Plans in place in the state all contain the category of volcanic hazard.

Discussion of the development of quantitative measures for assessing hazard risks in Hawaii:

   e. The State Civil Defense Agency, through its Hawaii State Earthquake Advisory Committee, published, *Earthquake Hazard and Estimated Loss in the County of Hawaii*, dated February, 2005, which assesses the degree of earthquake risk in the county by estimated future Annual Earthquake Loss Ratios (AELR). FEMA's HAZUS methodology, adapted to Hawaii-based data, was utilized to formulate the findings of this report. This effort was partially funded by Hawaii's CZM program

   f. The University of Hawaii's School of Ocean Resource Engineering is engaged in research directed toward assessing impacts, and predictability, of earthquake-generated tsunamis for the state Civil Defense Agency and NOAA[2]. Independent research on potential tsunami generation by local earthquakes, assisted by Hawaii's CZM program, is being performed at the Institute for Geophysics at the University of Hawaii. The East West Center at the University is conducting studies on climate change impact on sea levels and the establishment of a Pacific Integrated Ocean Observation System (PacIOOS) to monitor and predict sea level changes and high waves.

2a. Discussion of risks from inappropriate development.

[2] Source: State Civil Defense Agency

The risk from inappropriate development in coastal areas is high but it is primarily a risk of property and infrastructure loss rather than life-threatening. Life threats loom, however, when an infrequent event such a tsunami occurs. One option for mitigation efforts in such events is to focus on the evacuation of people from the hazard area rather than on development restrictions since such restrictions in the short-term will have a minimal effect and will not assist the already built-up areas in the hazard zone.

However, the state has taken an extremely significant long-range action to prevent future development from encroaching on seaward-moving shorelines. The 2003 law maintaining accreted coastal land in the public domain in perpetuity, (1) prevents development on the new coastal area (historically, accreted land was developed when privately acquired), (2) a protective buffer to abutting properties is produced by the widening of the beach and the additional vegetation that is supported by it to help diminish the wave energy from storm surges and tsunamis, and (3) the natural resource is preserved and allowed to undergo natural processes and functions such as duning and as specie habitat and open space.

2b. **Synopsis of changes since last assessment:**

Multi-Hazard Mitigation Plans: The State of Hawaii and all four counties within the state have completed and adopted Mutli-Hazard Mitigation Plans with CZM technical and/or financial assistance. All plans cover potential hazards from hurricanes, earthquakes, tsunamis, flood, wildfires and lava flows. The lava flow elements of the plan, with particular application to the County of Hawaii which contains an active volcano, benefited from the work of the Lava Flow Mitigation Technical Committee created by the State of Hawaii in 2000 by State Civil Defense. In addition, the Counties of Hawaii and Kauai were assisted by the conduct of Risk and Vulnerability Assessments (RVA's) with funding from the CZM program.

Continuing Research: Research activities directed toward assessing the potential impact of tsunamis on main islands within the state and toward predicting the probability of tsunami generation from localized earthquakes, continues at the University of Hawaii.

The East West Center of the University of Hawaii is also engaged in research to assess the impacts of climate change on ocean conditions (including sea level rise) and weather.

Shoreline Setback: The County of Maui, now calculates the required shoreline setback for structures by applying a present coastal erosion rate (determined by a CZM-assisted aerial photo reconnaissance and analysis) for a 50 year period.

Public Education and Outreach: The CZM program also assisted in the production of *The Hawaii Coastal Hazard Mitigation Guidebook*, the *Erosion Control Guideb*ook, a revised version of *Tsunami – The Great Wave*, and in conjunction with DLNR, *The Coastal Construction Guidebook*, all public information documents to help public understanding of coastal hazards. The Hawaii State Earthquake Advisory Committee also published a document entitled ,*Earthquake Hazards and Estimated Losses in the County of Hawaii,* with CZM assistance.

Management Characterization

Category	Change Since Last Assessment	Significance of Change
Building setbacks/restrictions	**significant**	SMA process reviewed; basis for revised standards to assist hazard mitigation: Maui formula for determining shoreline setback uses erosion rate x 50 years
Repair/rebuilding restrictions	**significant**	See building restrictions
Promotion of alternative shoreline protection	moderate	All counties encourage; enforcement continues
Renovation of shoreline protection structures	moderate	See above
Beach/dune protection	**significant**	Law makes accreted land public in perpetuity; Lanikai beach restoration continues under state program; shoreline location process revised
Permit compliance	moderate	New legislation strengthens enforcement
Inlet management plans	moderate	State Harbors Div. applies stormwater control standards.
Special Area Management Plans	**significant**	NW Islands of Hawaii declared ecosystem reserve and marine refuge; new fishery reserve for Hawaii county
Local hazard mitigation planning	**significant**	Multi-Hazard Mitigation Plans adopted in all 4 counties. Hawaii Co. studies earthquake risk measurement
Local post hazard development plans	none	
Real estate sales disclosure requirements	Moderate	Contained in Bd. Of Realtors Code of ethics and Statutes, 467, HRS
Restrictions on publicly funded infrastructure	none	
Public education and outreach	**significant**	Many forums, conferences pamphlets, news releases
Mapping/GIS/tracking of hazard areas	**significant**	All CD agencies have GIS capability; earthquake areas mapped in Hawaii Co.; State CD will study historic storm tracks

3**. Impediments**: Impediments encountered to realization of 309 programmatic objectives are those routinely encountered for new initiatives, i.e., inertia, priority competition for funding, time lapse for program and task development.

Conclusion:

1. **Priority Needs**: Priority needs in the Coastal Hazard Enhancement Area include: developing and applying performance measure indicators, implementation of improvements to SMA permit process and enforcement; revision of statutory definition of shoreline; implementation of development standards to incorporate additional hazard mitigation requirements; completion of research on probable tsunami impacts on Hawaiian Islands; plan for adequate shelters for people evacuated or displaced by natural disasters.

2. Priority – Last assessment

   High___●___
   Medium___
   Low_____

   Priority – This Assessment

   High ___●___
   Medium___
   Low_____

Coastal Hazard Strategies

Strategic Objectives: To prevent, or significantly reduce, threats to life and property from hurricanes, floods, storm surges, erosion, subsidence, earthquakes, tsunamis, lava flow or climatic sea level rise by development controls in coastal hazard areas. Implementation requires directing public and private development away from hazard areas, providing safety buffers for development near the coastline while preserving and restoring the natural protective functions of shoreline features. This objective is particularly critical in the State of Hawaii dues to the extensiveness of its coastal exposure.

The following strategies are provided for this priority enhancement area to be addressed by the state during the period 2006-2010. The strategies are provided in the form of summaries of program "changes" and program "continuations." End-document summary tables shows the sequence, implementation elements, scheduling and projected cost of each priority program

Summary of Strategic Program Continuations and/or Program Changes:

Program Continuations:

1. Develop and implement performance measures by which to quantitatively and qualitatively evaluate the efficacy of programs, projects, activities and efforts in this enhancement area in conformance with NCMPMS

2. Promote the next phase of strengthening and streamlining the SMA permit process.

3. Continue to promote the aerial and GIS-based mapping of the shoreline in order to chart erosion rates.

4. Continue to promote tsunami research on the probable extent of impacts and the probability of tsunami generation from locally based earthquakes.

5. Continue to engage in and promote the generation of public information, forums and publications on coastal hazards.

Potential Program Changes:

1. Pursue changes in the methodologies utilized by counties in determining the shoreline setback in order to recognize and consider coastal erosion rates in the determination.

2. Pursue stricter adherence to shoreline setback regulations by issuing authorities.

3. Pursue statutory amendment to the definition of "shoreline" in order to insure that shoreline locations are at the "highest reach of the waves."

Ocean Resources

Resource Characterization:

1. Characterize ocean resources and uses of state concern and specify existing and future threats or conflicts(**bold type indicates new category**).

Resource/Use	Existing Threat or Conflict	Threat level High/Medium/ Low	Future Threat or Conflict
Ocean Recreation	a. **Over-saturation/use; exceed Carrying capacity of resource and/or geographic portions of it.**	a. **High**	a. **Over-saturation/use; exceed carrying capacity of resource and/or geographic portions of it**
	b. User conflicts, includes commercial, individual and cultural	b. High	b. Continuing increase in conflicts
	c. Inadequate enforcement of regulated activities	c. High	c. Enforcement is low priority
	d. Lack of awareness of regulations by residents and visitors	d. Medium	d. Continuing difficulty in enforcement

Harbors/marinas	a. Inadequate maintenance of small boat harbors/marinas and launching ramps **b. Live-aboards** c. Enforcement	Medium **b. High** c. High	a. continuing degradation of near-shore waters b. **Sewage and waste disposal**. c. Low priority function
Aquatic Life (Including Fish as an ocean food source)	a. Depletion of inshore fish stocks b. Depletion of bottom fish stocks **c. Depletion of exotic species for aquariums** d. Introduction of alien species e. Degradation of coral reefs f. **Marine mammal protection** **1. Public interaction** 2. **Submarine sonar testing**	a. High b. High **c. High** d. High e. High f.**1 Medium** **f.2 High**	a. Mitigation programs not pursued and continued over-fishing b. Mitigation programs not pursued and continued over-fishing **c. Mitigation programs not pursued and over-fishing continues** d. Control programs not pursued e. Mitigation programs not effective f.1 **Enforcement not effective** **f.2 Testing continues**
Future food Sources (excluding fish)	a. **Pollution restricts ability to Develop and use new ocean food sources** b. Environmental impacts from Aquaculture	a. **High** b. Medium	**a. Ocean pollution unmitigated** b. Ineffective controls
Coral Reef Ecosystems	a**. Degradation from pollution, And sediments from land-based runoff.** b. Invasive specie importation c. Human disturbance	a. **High** b. High c. Medium	**a. Mitigation programs ineffective** b. Mitigation programs ineffective c. Controls ineffective
Cont. Beaches and Tidal interface	**a. Loss of public access** **b. Loss of public ownership** c. Coastal erosion d. Storm surge and flooding e. Water quality degradation f. Encroachment by development on Shoreline g. "Hardening" of shoreline	**a. Low** **b. Medium** c. High d. Medium e. High f. High g. High	**a. Relaxation of efforts to constantly gain new access** **b. Possible court action to overturn new accretion-ownership law.** c. Ineffective mitigation measures d. Relaxation of development control Measures e. Ineffective mitigation measures f. Ineffective controls g. Ineffective controls

Source of energy and cooling water	a. Conflicts with other ocean uses b. Environmental impacts from such uses	a. Medium b. High	a. Increase in demand for such uses b. Ineffective controls
Water Quality	a. Pollution from ocean uses – **cruise ship waste**: oil spills, recreational uses. b. Polluted runoff from land-based sources –stormwater**, sewage outfalls and emergency discharges**	**a. High** **b. Medium to High**	a. **Ineffective controls** **b. . Ineffective mitigation**
Marine Minerals	a. Environmental impacts from "mining" minerals b. Jurisdictional conflicts	a. Low b.. Low	a. Increased demand for such activities b. Ineffective agreements
Research and Development Uses	a. Conflicts with other uses b. Environmental Impacts	**a. Medium** b. **Low**	a. Increase in such uses b. Lack of enforcement
"Life-line" shipping supply for Hawaii	**Over-regulation and increased costs**	**Medium**	**Lack of recognition of this I importance of this resource to the State of Hawaii**

3. Changes in resources or relative conflicts/threats to resource since previous assessment.

Changes are as follows: Nomenclature – "marinas" has been added to the "Harbors" category; "Fisheries" has been broadened to "Aquatic Life"; "Beaches and Coastal Erosion" has become "Beaches and Tidal Interface"; "Aquaculture" has been incorporated under the new category of "Future Food Sources"; "Marine Ecosystems" and "Waste Management" have been discontinued and concerns covered in remaining categories, primarily "Water Quality", a new category; "Life-line Shipping" has been added as a new category of an ocean resource critical importance to Hawaii; "Coral Reef Ecosystems" has been added as a new category.

Management Characterization

1. Status of significant state ocean management programs/initiatives since previous assessment.

Program	Status	Source
Comprehensive ocean management statute	In place since 1977	State Legislature/ Congress
Statewide ocean resources management plan	Updating of existing plan in progress	CZM driven and funded
Single purpose statutes for ocean management	Existing – new ones added,'01,'02,'03,'04,'05 see p-12	CZM driven
Statewide ocean resource planning/working groups	Existing (MACZAC) – New Group formed by state	CZM driven

Regional ocean resources planning efforts	Continuous	CZM driven
Ocean resources mapping/information systems	Continuous – GIS capability added	CZM driven and funded
Dredged material management planning	Existing regulations improved	CZM/CWA driven
Habitat research, assessment, monitoring	Continuously in progress	Some research CZM funded
Public education and outreach programs	Continuous	CZM driven and funded
Coral Reef protection – Designation of NWIHI Coral Reef Ecosystem Reserve	Est. – enhanced by Coral Reef Initiative, Univ.H	CZM related, NOAA funded
State regulations designating NWI as marine refuge	Recent initiative by Governor	CZM related – funding n/a
Two, first ever, ocean leases granted by state for aquaculture/fish stock replenishment	Just underway	CZM related
Single purpose statute for ocean resource protection making accreted beach land , public in perpetuity	Signed into law by Governor, 2003	CZM related – funding n/a

2. Description of program achievements since last assessment:

Ocean Resources Management Plan (ORMP) Hawaii's initial ORMP was adopted by the State legislature in 1994. In order to reflect changed conditions, new technology, new directions, new potentials, the plan is being updated. Work on the plan update began in 2003 and the revision process and guidelines finalized in 2005. The process and guideline report will be submitted to the 2006 session of the state legislature. The plan revision will then be scheduled for completion in 2006.

Ocean Resource Planning/Working Groups: In 2001, Hawaii's comprehensive ocean management statute, 205A,HRS, was amended to create a public advisory group for Hawaii's CZM program and its lead agency, the Office of Planning. The resulting group, the Marine and Coastal Zone Advisory Council (MACZAC), a citizen body of twelve members, created sub-working groups within its structure. One such group, the ocean resources management plan group[3] is devoted to ocean resources planning. In 2005, the Governor created the Hawaii Ocean Coastal Council (HOCC) consists of 30 members representing local, state and federal government agencies, and public interest groups. MACZAC is a member of HOCC also. In response to a request, the HOCC submitted draft goals for the updating of the ORMP, complementing those submitted by MACZAC to the state Office of Planning in October, 2005.

Single Purpose Statutes Related to Ocean Resources:

2000 – Prohibited and controlled the import of alien aquatic organisms (HRS,187A)
Established the endangered species trust fund (HRS,195D)

2001 - Strengthened penalties for violations of statutes and rules governing Hawaii's Natural Area Reserves.(HRS,195)

2002 - Amended state authority for the enabling of ocean leases (HRS.190D)
Broadened scope of "landowners" who can qualify for "safe-harbor" status when participating in conservation and preservation agreements (HRS,195D)

[3] Other MACZAC working groups are: Cultural Resources Management; Shoreline Certification; Water Quality; Ocean Resources Management; Coastal Erosion, Coastal Parking and Legislative

2003 - Revised the state's "accretion" law to make all newly accreted beach land public land in perpetuity (HRS, 501-33)

2004 - Prevented statutory waivers and reduction of penalties for small businesses from applying to environmental law violations(HRS,201); Expanded state land agency's enforcement authority to all state land and waters.(HRS,6K,171,174C,1990)

2005 - Designated Miloli'i, an area off the South Kona coast as a traditional Hawaiian fishing village, fishery management area (HRS,188); Prohibited the discharge of untreated sewage from cruise ships in waters under the jurisdiction of the State of Hawaii (342D,HRS) minimize coastal light pollution (Act 224); Established land conservation fund to provide stable funding for the state's Natural Area Reserves and grants to counties, state agencies and non-profit land conservation organizations for acquisition of conservation areas and protection of endangered species. (Act 156).

Habitat Research, Assessment, Monitoring: The Coral Reef Initiative , a partnership of the University of Hawaii, the state land and water agency (DLNR) and NOAA, surveyed near-shore reefs around the main Hawaiian Islands for non-indigenous and invasive species found there as well as alien algae and reported on their findings (2001 to 2005).

Protection of Threatened and Endangered Species: State and county civil defense agencies are parties to oil spill and hazardous material responses where U.S. Coast Guard, EPA, DOI, FWS and NOAA operate under an MOU that requires protection of endangered species in such situations.

Shoreline Determination: During 2002 and 2004, MACZAC conducted three video conferences dealing with problems stemming from, and solutions for, properly determining the location of the shoreline. The annual conference of the Hawaii congress of Planning Officials also featured a workshop on the issue of shoreline determination

Public Education and Outreach: The state Office of Planning, the lead CZM agency in Hawaii, sponsors an annual All-Islands CZM Meeting and in October 2005, sponsored the Ocean Resources Plan Workshop in Honolulu as an element in the preparation for revising Hawaii's ORMP.

Alien Species Control: In response to the 2000 legislation prohibiting the import of alien aquatic organisms, the Division of Aquatic Resources of the state's DLNR in 2003, prepared an *Aquatic Invasive Species Management Pla*n and Administrative Rule amendments to govern the administration of the law and the implementation of the plan. The rules establish a system to monitor the nature and discharge control of the ballast water from ships arriving in Hawaiian ports. The monitoring and enforcement activities in this area will be conducted in close cooperation with the U.S. Coast Guard which also receives ship ballast water reports and has a federal responsibility for the transport of alien species. The Rules are pending final adoption.

Beach Restoration: In 2005, the state DLNR issued a contract for the replenishment of sand on Kuhio Beach at Waikiki, Oahu and in conjunction with the USCOE is participating in a beach restoration and erosion control project at Lanikai Beach on Oahu. Other beach restoration projects are pending at Paiea, Maui, Lahaina , Maui,and Poipu, Kauai

Conclusion:

1. Priority needs in this area include: developing and applying performance measure indicators, completion of the Ocean Resource Management Plan Update; the establishment of the NWIHI archipelago as a National Marine Sanctuary; public education and outreach and continuing research on coral reef ecosystems.

2. Priority

Last Assessment	This Assessment
High ●	High ●
Medium	Medium
Low	Low

Ocean Resource Strategies

Strategic Objectives: To promote long-range planning for the use , care and enhancement of ocean resources, developing regulatory, intra-governmental coordination and educational mechanisms for ocean resource management.

Summary of Strategic Program Continuations and/or Program Changes:

The following strategies are provided for this priority enhancement area to be addressed by the state during the period 2006-2010. The strategies are provided in the form of summaries of program "changes" and program "continuations." End-document summary tables shows the sequence, implementation elements, scheduling and projected cost of each priority program

Program Continuations:

1. Develop and implement performance measures by which to quantitatively and qualitatively evaluate the efficacy of programs, projects, activities and efforts in this enhancement area in conformance with NCMPMS

2. Pursue the preparation for, and completion of, an updated Ocean Resources Management Plan for Hawaii.

3. Pursue improvement in the enforcement of the state's effort in the control of alien species.

4. Pursue continuing research on coral reef ecosystems and habitats

5. Continue to engage in and promote the generation of public information, forums and publications on ocean resources.

Special Area Management Planning
(**Marine Protected Areas**)

1. Resource Characterization:

Area	Major Conflicts
Ahupua'a/\Watersheds	Urbanization, no jurisdictional focus, no management structure, property rights
Marine Protected Areas	Multiple governmental jurisdiction, ocean recreation, commercial fishing, pollution
Coral Reefs	Multiple governmental jurisdiction, ocean recreation, aquarium fishing, pollution
Heritage Rivers	Recreation, tourism, property rights
Fishery Management Areas	User conflicts, commercial fishing, pollution
Fisheries Replenishment Areas	User conflicts, commercial fishing, pollution
Natural Area Reserves	User conflicts, recreation, tourism
Wildlife Sanctuaries	User conflicts, recreation, tourism

Management Characterization:

1. Areas of the coast that are being addressed by a special plan since last assessment[4]

Area	Type of Management
11 State Marine Life Conservation Districts[5] (2 districts added in last 5 years)	Conservation/controlled use/ protection of T & E species
2 Wildlife Sanctuaries (Coconut Island-Oahu) Paiko Lagoon-Oahu)	Preservation/controlled use/ protection of T & E species
28 hery Management Areas (9 of which are replenishment areas)	Resource allocation
4 Natural Area Reserves (Kaho'olave, Ahihi-Kiinau, National Humpback Whale sanctuary Waters, S. Kona opelu fishing area)	Preservation/conservation/ protection of T & E species
Miloli'i traditional Hawaiian fishing village (2005)	Fishery allocation
Northwest Islands of Hawaii (NWHI) Marine Refuge (State designation, 2005	Preservation/conservation/ protection of T & E species
Bottomfish Restricted Areas	Fishery conservation/ allocation

.

2. Significant changes since previous assessment.

[4] Several Areas existed prior to 2001 but have not been noted in prior 309 Assessments

[5] Oahu-Pupakea, Waikiki, Hanauma Bay; Maui-Honolua-Mokuleia Bay; Molokini shoal; Lanai-Manele-Hulopoe; Hawaii- Lapakahi, Waialea Bay, Old Kona Airport, Kealakekua Bay, Waiopoe

Ahupua'as/watersheds: All of the previously reported watershed partnerships continue to function and to seek the ahupua'a management concept in their operation. The Kailua Bay Advisory Council has prepared a draft Master plan for the Ko'olaupoko Watershed on the windward side of Oahu. In 2002, the Hilo Bay Watershed Advisory Group was formed, applying the ahupua'a management approach to the area . The group has prepared the Hilo Bay Watershed –Based Restoration Plan.

NWHI Marine Refuge: In December, 2000 the U.S. President created the NWHI Coral Reef Ecosystem Reserve by Executive Order. In 2004, the Western Pacific Fishery Management Council submitted draft fishing regulations for the Reserve to NOAA. NOAA rejected the draft as not meeting the goals and objectives of the Reserve. In September, 2005, Hawaii's Governor signed regulations establishing The NWHI Marine Refuge. Both actions are elements of the move to establish the NWHI as a National Marine Sanctuary. In November, 2005, two fishing clubs in Hawaii asked the U. S. Department of Commerce to investigate the actions and directions of the Western Pacific Fishery Management Council.

Hawaii's Comprehensive Wildlife Conservation Strategy (CWCS) was completed utilizing state wildlife grants by USFWS in October of 2005 and submitted for review at the federal level. The state Fish & Wildlife and Aquatic Resources Divisions collaborated on the preparation of the CWCS which addresses the needs of marine life and habitat conservation in all of the designated special areas included in this section.

Marine Life Conservation Districts, Fishery Management Areas, Wildlife Sanctuaries and Natural Area reserves: Although most of these areas in Hawaii were designated prior to 2000 (some Fishery Management Areas (FMAs) were designated and others amended in 2002 and one Natural Area Reserve was created in 2005), they are all included in this Assessment in order to note their existence. The existence of these areas is indicative of the strong state commitment to preservation/conservation of coastal resources. They all are subject to potential cumulative and secondary pollution impacts from land-based runoff and need continuing management to protect them. Consequently, they are proper candidates for CZM attention as Special Area Management approaches. In January, 2005, the state DLNR prepared its policy document for managing marine protected areas, *Framework for Marine Protected Areas.*

Public Education and Outreach: In the process of developing policy and/or actions, i.e., *Comprehensive Wildlife Conservation Strategy, Framework for Marine Protected Areas,* the public is asked for input and commentary. Each division of the state DLNR maintains a website available to the public (www.hawaii.gov/dlnr;) and Hawaii CZM maintains an umbrella website on the subject (www.hawaii.gov/dbedt/czm)

Conclusion:

1. This enhancement area is increasing in priority due to the focus on the designation of, and management needs for, a National Marine Sanctuary for the NWHI and the number of special areas on Hawaii's coast. The development and application of performance measure indicators is also needed. Priority for other existing special areas will focus on the need to improve management efforts and for more effective enforcement of the regulations governing them.

Last Assessment	This Assessment
High_____	High ●
Medium ●	Medium___
Low _____	Low _____

Special Area Management Plan Strategies

Strategic Objectives: The planning and implementing of measures to protect, preserve and enhance coastal and ocean areas of importance and which contain endangered species, special habitats and significant natural resources.

Strategic Program Continuations and/or Program Changes:

Program Continuations:

1. Develop and implement performance measures by which to quantitatively and qualitatively evaluate the efficacy of programs, projects, activities and efforts in this enhancement area in conformance with NCMPMS

2. Continue to engage in and promote the generation of public information, forums and publications on Special Area Management Planning. (Note; Special areas also include watersheds, soil conservation districts and other conservation/management areas).

Cumulative and Secondary Impacts

Resource Characterization:

1. Identify areas in the coastal zone where rapid growth or changes in land use require improved CSI management.

Estimated Change in Acreage in State Land Use Districts,2000- 2004

District	Acreage, 2000	Acreage, 2004	Change
Urban District	194.556	196,991	+ 2435
Conservation District	1,974,106	1,973,636	- 470
Agricultural District	1,933,687	1,931,378	-2309
Rural District	10,039	10,383	+ 344

Analysis of the district changes by counties shows that half of the increase in the urban district occurred in the City & County of Honolulu with the other half about equally divided between Maui and Hawaii counties. One half of the corresponding decrease in the Agricultural district occurred in Honolulu and almost all of the other 50% occurred in Maui.

Coastline Urbanization:

Island	Percentage of Land Mass in Conservation, Agriculture, Rural State Land Use Districts	Percentage of Developed Coastline
Kauai	96 %	50 %
Oahu	95 %	75 %
Maui	95 %	40 %
Molokai	98 %	25 %
Lanai	96 %	30 %
Hawaii	97 %	50 %

Population Growth, 2000-2005

State/County	Population, 2000	Population, 2005	Change	Percent Change
State of Hawaii	1,211,537	1,275,468	63,931	5.2 %
Honolulu	876,156	908,580	32,424	3.7 %
Maui	128,094	139,595	11,504	8.7 %
Kauai	58,463	62,501	4,028	6.9 %
Hawaii	148,677	164,599	15,922	10.7 %

Visitor Impacts on Population

State/County	Daily Visitor Census, 2001	% Population	Daily Visitor Census, 2004	% Population
State of Hawaii	158,243	13 %	171,480	13.5 %
Honolulu	79.699	9 %	83,718	9.3 %
Maui	38,723	29.5 %	45,517	32 %
Hawaii	21,064	13.8 %	23,376	14 %
Kauai	16,830	28.5 %	18,869	30.5 %

2. Population growth. urbanization and visitor counts in the daily census all are impacting the Counties of Maui and Kauai, and to a lesser extent, Hawaii County, at a pace greater than that of the state as a whole and that found in Honolulu. However, from the standpoint of absolute numbers, Honolulu County poses a greater impact on coastal zone resources from the cumulative and secondary impacts of polluted runoff than the other counties combined. The circumstances require attention to remedial mitigation approaches for Honolulu County (Oahu) while preventive measures are more applicable to the other counties.

Tourism Carrying-Capacity Study: State statutes require a study to assess the tourism "carrying capacity" of the state and its update every 5 years.[6] The results of the first such study is scheduled to be presented to the 2006 session of the State legislature.

Status of CNPCP: Progress has been made in satisfying all conditions specified by NOAA for approval of Hawaii's Coastal NonPoint Pollution Control Program. Approval is expected in 2006.

Drainage Regulations and BMPs: In meantime, the City and County of Honolulu has revised its grading and drainage regulations, the County of Maui is in the course of amending its drainage regulations and the County of Hawaii is preparing proposed ordinance amendments to reduce runoff from developments. All counties require the application of BMPs for construction projects.

Water Quality Standards: The State Department of Health has prepared an amendment to Hawaii's water quality standards to raise gradient salinity standards for surface waters from the shoreline to the 3-mile limit to a depth of 100'. The amendment is presently in the public comment stage.

Stream Assessments: Following *Hawaii's Implementation Plan for Polluted Runoff Control,* the Environmental Planning Branch of the Department of Health (DOH) conducted visual and bio-assessments of 46 streams to monitor and update its list of impaired watersheds within the state.

TMDL Studies: Implementing the plan for polluted runoff control, the DOH also conducted TMDL studies for two impaired water bodies (Kawa stream on Oahu; and the Ala Wai watershed on Oahu). Four others are underway (Kiikii stream –Oahu; Waialua and Alenaio streams – Hawaii; and the Hanalei River estuary on Kauai)
A TMDL study for Waimanalo stream on Oahu was completed earlier. These TMDLs bring Hawaii one step closer to implementing an actual decrease in the pollutant load carried by these streams and watersheds into the ocean.

Other Actions: The DOH also produced its *Hawaii's Local Action Strategy to Assess Land-Based Pollution Threats to Coral Reefs*, in 2004 and the DLNR produced a public education and outreach document in 2005, entitled, *Getting Involved in Caring for Hawaii's Coastal Resources: A Community Guidebook.*

Wai'anae Ecological Characterization and Wai'anae Moku Management Framework:
These two projects, funded by 309 grants, are aimed at establishing a working structure to manage the ecology of a traditional Hawaiian land district (Moku) comprised of several ahupua'a or watersheds to lessen impacts on natural resources. The Waianae Ecological Characterization was completed in 2005 and the structure created continues to operate. The final phases of the Wai'anae Moku Management Framework are presently in progress..

Hilo Bay Watershed Advisory Group: A new watershed/ahupua's oriented partnership to protect the ecology of Hilo Bay in the County of Hawaii was formed in 2002. Its partners include the County Planning Department, The Environmental Center at the University of Hawaii and citizen stakeholders. The group has prepared a watershed restoration plan for the area.

[6] 225M, HRS

Conclusion:

1. Priority Needs include: development of performance measure indicators establishment of watershed/ahupua'a management structures and the principles to guide such structures, mitigation/restoration plans, application of BMPs, water quality, drainage, grading, and storm-water regulation upgrading , TMDL studies for all water bodies listed as "impaired", and enhanced enforcement measures.

2. Last Assessment priority

   High ___●___
   Medium ____
   Low _____

   This Assessment priority

   High ___●___
   Medium____
   Low_____

   This enhancement area continues to receive a high priority due to the realization that land-based activities of the resident and visitor population is the primary source of pollution threats to the natural resources of the coastal zone. Major commitments are needed to effect remedial and mitigation measures protect resources over a long-range period and to develop and apply performance measure indicators, thus making it an area of necessary concentrated effort.

Cumulative and Secondary Impact Strategies

Strategic Objectives: The development and adoption of procedures to asses, consider and control cumulative and Secondary impacts of coastal development on coastal resources.

The following strategies are provided for this priority enhancement area to be addressed by the state during the period 2006-2010. The strategies are provided in the form of summaries of program "changes" and program "continuations." End-document summary tables shows the sequence, implementation elements, scheduling and projected cost of each priority program

Strategic Program Continuations and/or Program Changes:

Program Continuations:

1. Develop and implement performance measures by which to quantitatively and qualitatively evaluate the efficacy of programs, projects, activities and efforts in this enhancement area in conformance with NCMPMS

2 Completion of the Wai'anae Moku Management Framework project.

3. Continue to pursue final approval of the CNPCP

4. Continue to pursue amendment of the state's water quality standards.

5. Continue to pursue further applications of watershed assessments, stream assessments, TMDL studies and the implementation of resulting recommendations.

Program Changes: 1. Pursue the definition of guiding principles for the establishment and operational scope of watershed/ ahupua'a management structures, including the statutory/regulatory basis to support their application.

2. Pursue the establishment of watershed/ahupua'a management structures (based on Wai'anae moku Management Framework pilot), introducing rural best management practices and low impact development principles where applicable, to create management systems for improved control of polluted runoff.

Public Access

Resource Characterization:

1. The quantitative and qualitative adequacy of public access to Hawaii's shoreline and coastal resources is considered to be very high and local and state governments continue routinely with efforts to maintain and enhance such access.

2. Overall demand has peaked as the adequacy of opportunities improved with time. However, on the basis of beach counts, user polls and expressions of community desires, low-level demand occurs for specialized improvement.

3. The one outstanding impediment to providing improved access is the issue of automobile/bus parking for pedestrian access points. Such installations are not only costly and impactive on private property but inherently contain conflict with other resource management objectives such as preservation of natural aesthetics, permeability of land, polluted runoff control and air pollution

4. Inventory

Access Type	Current Numbers	Change Since Last Assessment
National/State/County Parks	7 National Parks –365,830 acres 69 State Parks – 27,116 acres 649 County Parks – 8,594 acres	+ 116,830 acres + 301 acres + 229 Parks,1,826 acres
Beach/Shoreline Access	184.9 miles of sandy shoreline 1600 surfing sites; beaches in Hawaii are public seaward of the vegetation line	Public ownership of beach land, lateral access protected by 2003 law making all accreted land public in perpetuity
Recreational Boat Access	21 small boat harbors; 54 boat ramps 13 offshore mooring facilities	
Scenic Vistas/Overlook Points	20 formal overlook points: most of coastline served by major highways offering routine scenic ocean vistas to drivers	Vista point added for 'whale=watching" on Oahu
. Public Perpendicular Rights-of-Way	There are many existing perpendicular public ROW's (pathways) in the state. There are also many incidental access points, public but not "formalized."	New ones are added via SMA permits and acquisition

Fishing Points	23 public fishing piers exist throughout the state	New ones are added via SMA permit process and acquisition
Coastal Trails	Na Ala Hele, the state's trail system maintains 112 trails on 6 Islands, Most of the trails are mountain trails but offer ocean and coastline vistas	Trails are maintained and improved systematically
ADA Compliant Access	Most beach park accesses are now ADA compliant	Many ADA facilities installed
Public Beaches – w/WQ monitoring and public notice of conditions	141 publicly owned beach parks exist in the state on 6 islands. .Water quality monitoring is performed periodically at various locations and in 2004 covered 76 of these beach parks. The monitoring coverage alternates each year amongst individual parks.	2 new beach parks have been added The monitoring coverage has increased from about 50 parks in 2001
Other Beaches	Beaches and open shorelines exist at other points along the coastline where views and physical access is afforded by proximity to a major roadway.	
Public Access Enhanced		ADA Improvements have been added. Cesspools are being replaced at state parks and counties have systematic Capital Improvement Programs for upgrades: signage installed

5. The state has a website for state parks, www.state.hi.us/dlnr/dsp and for the coastal trail program, www.dofaw.net. Beach park locations are well known to residents, are listed in street-map guides, are shown on phone directory maps and in guide books for visitors. The County of Hawaii is planning a website to show public access points.

Management Characterization:

Management Category	Nature of Change	Effect	Funding
Statutory, Regulatory, Legal[7]	New statute rendering newly accreted beachland as public land in perpetuity: Some SMA permits require new access	Guarantees lateral access: new access gained	N/A
Acquisition Programs	New beach parks acquired; County of Hawaii sets up "public access, open space and resources preservation fund"	Access increased: funding for future access created	CZM driven; County funds
Access Management	Database of public access points developed by Hawaii County in GIS system	Will be placed on-line	CZM driven
Operation/ Maintenance	State and counties have systematic maintenance for parks and public ROWS	Always in good condition	Budget process
Education & Outreach	Native Hawaiian Access rights Project has public meetings: private group(PASH) holds vigil at hotel as reminder that public access is available on underlying state land	Augment awareness: Prevents sale of land to hotel	CZM, 309: Private
Beach WQ Monitoring /Remediation	Number of beaches monitored increased: Remedial action ongoing	Increased protection: WQ levels stabilizing	Budget: CWA

[7] Existing Statutes protect landowners that allow public access for recreational purposes over private land from adverse possession claims, 520,HRS

Conclusion:

Priorities in this area include: developing and applying performance measure indicators, continuing acquisition of access points through planning, SMA permit conditions, ADA accommodation improvement and public information on access locations.

2. Priority Last Assessment

High ●

Medium____

Low _____

Priority This Assessment

High_____

Medium ●___

Low _____

The change in priority reflects general progress in improving and assuring coastal access to the point that other enhancement area concerns assume a higher priority.

Public Access Strategies

Strategic Objectives: To attain increased opportunities for public access to coastal areas through statutory and regulatory systems as well as acquisitions and infrastructure improvement while minimizing adverse impacts on resources and property rights.

The following strategies are provided for this priority enhancement area to be addressed by the state during the period 2006-2010. The strategies are provided in the form of summaries of program "changes" and program "continuations." End-document summary tables shows the sequence, implementation elements, scheduling and projected cost of each priority program

Summary of Strategic Program Changes and/or Program Continuations:

Program Continuations:

1. Develop and implement performance measures by which to quantitatively and qualitatively evaluate the efficacy of programs, projects, activities and efforts in this enhancement area in conformance with NCMPMS

2. Promote implementation of additional access points through acquisition programs and/or conditional provision of SMA permits.

3. Promote infrastructure improvements at access points.

Wetlands

Resource Characterization:

1. Extent of coastal wetlands.

Wetland Type	Extent (acres and data year)	Trends
Tidal	15,474 (1990)	See # 2 below
Non-Tidal/Freshwater	95,326 (1990)	"
Publicly Acquired Wetlands	2,000*	Increasing interest and activity
Restored Wetlands	N/A	Several proposals pending
Created Wetlands	N/A	
Other – anchialine pools	148	

*Estimate

2. Although the USFWS now has a GIS map inventory of wetlands for the State of Hawaii, the base date of the information is unclear. The numbers extrapolated from the USFWS inventory are similar to the numbers provided above. In addition, they are consistent with inventory numbers provided for Oahu only by *Ecologically Sensitive Wetlands on O'ahu*, University of Hawaii Environmental Center, 1989. Consequently, the figures remain generally the same and cannot be measured against previous data to determine statistical trends. Anecdotal trends are quite positive. Public knowledge of wetland functions and interest in their preservation has undoubtedly increased. Most watershed plans, and the number of such plans is expanding, contain proposals for stream and/or wetland restoration. Large or otherwise significant wetlands command citizen support groups. Many school classes have embraced wetland study and fieldwork projects. A large wetland (391.6 acres) on Oahu was deeded to the state in 2002 and at least one major restoration project is pending (Ukoa Pond, 144.2 acres). These interests have resulted in more governmental interest and action, in Hawaii, producing legislated fund structures for acquisition of wetlands and other areas for conservation.

3. Direct and Indirect threats to coastal wetlands, both natural and man-made.

Threat	Threat Level	Trends
Development/fill	Medium	More controls available
Hydrologic Alteration	Medium	Greater awareness and control
Erosion	High	Greater awareness and controls
Pollution	High	More controls being applied
Channelization	Low	Governmental avoidance being practiced

Nuisance/Exotic Species	Medium	Greater awareness, controls and enforcement
Freshwater Input	Medium	Greater awareness of habitat and ecosystem concerns
Sea Level Rise	Medium	Research activities heightened

Management Characterization

Management Category	**Significant Change since last Assessment**
Regulatory	Kawai Nui Marsh on Oahu designated Wetland of International Importance by Ramsar Convention. Offered for consideration as National Park
Wetlands Protection Policies/Standards	All Oahu Development Plans adopted since 2000 contain wetland protection policies
Assessment Methodologies	Increased in scope and extent
Impact Analysis	Cultural and ahupua'a associations with wetlands now required to be addressed in environmental analysis
Restoration Programs	Many watershed plans pose wetland and Hawaiian fishpond restorations. Ukoa Pond restoration pending
Special Area Management Plans	Watershed partnerships in state plan protection and restoration projects
Education/ Outreach	School and University wetland projects proliferate
Wetland Creation Programs	State and County regulations allow wetland "banking" ,i.e. create wetland to replace one impacted by development
Mitigation Banking	See above
Mapping/GIS/ Tracking Systems	USFWS "Wetland Mapper" [8]GIS database covers all Hawaii. State GIS system has "wetlands" layer available
Acquisition Programs	Dedicated state fund created for acquisitions. Large wetland at Heeia on Oahu deeded to state.
Publicly Funded Infrastructure Restrictions	None
Impediments	No significant impediments have been encountered since last assessment

Conclusion:

1. Priority needs in this area include: developing and applying performance measure indicators, a comprehensive tabulation of wetland data for the state; enhanced enforcement in regulations; motivation and funding for Hawaiian fishpond restorations; creation of citizen "caretaker" groups for individual wetland areas and continuing education and outreach.

2. Last Assessment This Assessment

[8] www.wetlandsfws.er.usgs.gov

High_____	High_____
Medium ●	Medium ●
Low_____	Low_____

Aquaculture

1. Hawaii is an ideal location for aquaculture, the farming of plants and animals in water. From the mountains, to the ocean, water abounds, providing a myriad of environments to raise a wide variety of seafood. shrimp, abalone, seaweed, microalgae, *tilapia* and various organisms for the aquarium trade are among the many opportunities on all the tropical islands of the State.

   Commercial production is estimated to have grown from $25.2M in 2002 to $27.7M in 2003, a 10% increase in wholesale value. Research and technology is estimated to have contributed another $12M from variety of local and overseas projects. Therefore the Hawaii industry value for 2003 was estimated at $39.7M.

   Employment in the Production and Services Sectors increased slightly in 2003 to 942 people from 880.

   Over 30 different species of plants and animals are raised in Hawaii. These are grouped in four categories: Algae(*ogo* seaweed (Gracilaria), Spirulina and other microalgae); Shellfish (marine shrimp, freshwater prawns, crayfish, lobsters, oysters, clams, snails,abalone); Finfish (Japanese flounder, Chinese catfish, *tilapia*, carp, mullet, *moi* - Pacific threadfin, *awa* - milkfish, amberjack); Other (aquarium animals and plants, pearl oysters, shellfish and finfish "baby" (seedstock) and "parent" animals (broodstock).

   Farm-gate and retail prices for cultured products are uniformly high, as demand for aquacultured products exceeds the supply for most species. Algae (microalgae and ogo seaweed) continues to be Hawaii's most valuable aquaculture crop encompassing both local and export sales..

   New commercial species and new technologies provided opportunities for industry diversification. *M*oi, or the Pacific threadfin, was a local fish introduced in 1997 by farmers. Several farms began moi production with assistance from the Oceanic Institute and DLNR's Anuenue Fisheries Research Center (AFRC). In 2002, large-scale offshore cage culture of moi began under state leases of the open ocean. A variety of freshwater aquarium fish, crawfish, snails, abalone and black-lip pearl oysters continued to be developed for their commercial appeal. Other species used in research or pilot-scale projects included white and Russian sturgeon*, kahala* (amberjack), *papio* (blue trevally), and various high value marine aquarium animals.

   The year 2003 saw continued growth in the aquarium fish industry, primarily freshwater aquarium fish. Many small backyard "hobbyists" increased their output and existing aquafarms diversified into aquarium fish culture. The U.S. Department of Agriculture (USDA) continued to fund an aquarium industry development projects, which have assisted both existing aquarium producers, as well as developed new farmer interests. Further expansion of this segment of the industry can be expected.
   Going forward, the strong demand for seafood and the decline of traditional agriculture lands, will fuel the trend of new ventures in Hawaii's ocean environment.

The Algae category, is expected to show strong growth. Major investment in facilities will continue expansion of certified-disease free stock producers for both shrimp and clams. Freshwater and marine ornamental fish and plant production on both small- and large-scales is expected to increase. Emerging species such as abalone, *moi*, and amberjack, could contribute significantly to increases in overall industry value in the next decade.

In 2001, using the state's newly amended ocean-leasing laws, the Aquaculture Development Program (ADP) of the state Department of Agriculture (DOA) produced the first commercial open-ocean farm in the U. S. Cates International was granted a lease of approximately 28 acres of open ocean under Hawaii's jurisdiction (about 2 miles off the southern coast of Oahu) for an aquafarm to produce *moi,* a pacific threadfin fish. In 2002 , Hawaii granted a second open-ocean lease of approximately 90 acres off the southern coast of the County of Hawaii(located within the Hawaiian islands Humpback Whale National Marine Sanctuary, to Kona Blue Water Farms for the purpose of producing another variety of fish known in Hawaii as *kahala* (amberjack*).* In January, 2006, a federal Marine Aquaculture Task Force[9] observed Hawaii's operating "ocean farms." The Task force will make recommendations to Congress and NOAA regarding desirable environmental standards to govern aquaculture.

Hawaii is positioned to be a source of education, training and technical expertise in the pacific region for the long-term.

2. Environmental concerns about aquacultural activities include biophysical impacts, i.e., specie-introduction, threats to indigenous species; economic, i.e., competition for resource use; socio-cultural, i.e., competition for resource impacts on traditional practices and recreational desires.

Management Characterization:

1. Identify significant changes in the state's ability to plan and locate aquaculture facilities since the last Assessment.

Significant Changes in Ability to Plan and Site Aquaculture Facilities	Scope of Change	Successes/Impediments
Ocean leasing laws and Hawaii Administrative Rules amended	Allows conditional ocean leases; environmental assessment required	2 ocean leases granted subject to environmental controls
Experimental project preceding lease	Tested cage viability and release of baby fish	Helped insure mitigation of environmental impacts
ADP, DOA, develops prototype, GIS-based ocean mapping system	Helps to find locations for ocean aquaculture	Will help to produce tools for managing use conflicts

Conclusion:

1. Priority needs in this area include: developing and applying performance measure indicators, continuing research on impacts from open ocean farming; development of mitigation controls; research and development in new product areas; and public education on an increased need to prevent ocean pollution since it will increase as a food source for society in the future

[9] A nine-member, science-based group created in 2005 to provide recommendations for proper standards to control the environmental impacts of aquaculture, Honolulu Star Bulletin, 1/22/2006

2. Last Assessment
   High_____
   Medium ●
   Low_____

   This Assessment
   High_____
   Medium ●
   Low_____

Marine Debris

1. Characterization and extent of marine debris resulting from 2004 International Coastal Cleanup in Hawaii[10] (Top Ten Items)

Type of Debris on Land (54% of Total)	Amount (% of Total = extent of impact also)	Type of Impact
Cigarettes/filters	34.9	Trashy environment, degrades natural soils and sea life habitat
Container lids	11.5	Trashy environment, residue degrades soils and habitat
Food wrappers /containers	10.1	See above
Glass Bottles	8.3	See above + potential hazard
Beverage Cans	5.0	Trashy environment, residue degrades soil and habitat
Plastic cups, plates, utensils	3.8	See above
Plastic bottles	3.8	See above
Bags	3.7	See above
Straws/Stirrers	2.7	See above
Building Materials	1.0	Trashy environment, may be hazardous

Coastal land debris comprised 54 % of all debris cleaned up.

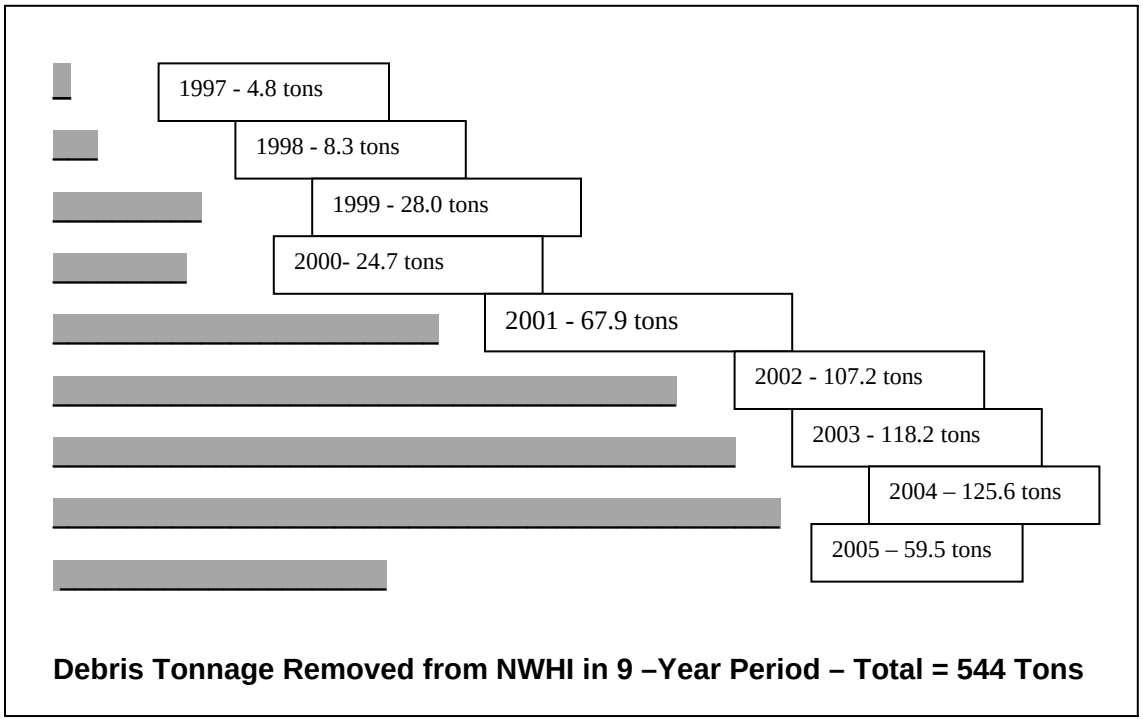
Characterization of top ten items of marine debris cleaned up from underwater areas during the 2004 ICC in Hawaii

[10] The Hawaii, CZM sponsored, ICC (Get the Drift and Bag It) occurred in September, 2004, involved 2,458 volunteers, including 105 divers, cleaned 27.3 tons of debris from 109 miles of coastal area and 4 miles of underwater area

Type of Debris	Amount (% of total = extent of impact also)	Type of Impact
Fishing Line	31.8	Causes entanglement of sea life 5 animals found entangled
Glass Bottles	18.0	Residue degrades ocean habitat Potential hazard, damage to reef
Cars/Car Parts	9.2	See above
Fishing Lures/Light Sticks	7.7	See above
Cigarettes/Filters	6.7	Trashes ocean environment, residue degrades same
Container Lids	4.6	See above
Beverage Cans	4.6	See above
Food Wrappers/Containers	3.6	See above
Batteries	2.6	See above + chemically toxic to sea life
Fishing Nets	2.1	Causes entanglement of sea life

Additional debris types include, medical waste, rubber.

Northwest Islands of Hawaii (NWIHI) Under a collaborative arrangement with the US. Coast Guard, University of Hawaii Sea Grant and NOAA, debris cleanup projects have occurred in the Northwest Islands of Hawaii chain since1997. Below is a graphic representation of the results to date:



Debris Tonnage Removed from NWHI in 9 –Year Period – Total = 544 Tons

Management Characterization:

Category	Significant Changes	Scope/ Effect
Recycling Incentive	2004 law sets 6 ¢ premium on plastic/glass bottles and beverage cans/ 5 ¢ redeemable on return	Statewide, has been effective for one year. Significantly reduced litter
Litter Laws	State DOH conducts periodic anti-litter advertising program	Statewide; effects not measured
Wasteful Packaging	N/A	N/A
Fishing Gear Management	Rules updated, lay gill-net prohibition in works	Statewide, lay gill-net prohibition for parts of Oahu and Maui
Harbor, Marina, Coastal Solid Waste Management.	Construction BMPs applied, stencil on storm drains warns of ocean litter	Statewide, storm drain stencils cover Oahu
Education/Outreach	Government and public service education programs continue	Statewide, effect not measured

Conclusion:

1. Priority needs in this area include: developing and applying performance measure indicators,litter law enforcement programs; expansion of coverage of recycling law and improvement in ease of redemption; wasteful packaging reduction..

2. Priority:

	Last Assessment	This Assessment
High	●	
Medium		
Low		●

Short-term accomplishments have contributed to the perception of progress in this area and its needs, although continuous, are considered relatively lower than other areas of concern where progress is only going to be long-term.

Energy and Government Facility Siting

Management Characterization:

1. Significant changes in the state's ability to address siting of energy and government Facilities since last assessment.

Change	Scope of Change	Significance
"Cultural Assessments" required in Environmental Analysis	All projects within coastal zone+all government projects	Impacts on cultural practices in coastal zones now assessed
State Environmental agency has new oversight power	All environmental assessments + impact statements	To eliminate conflicts of interest where agency is both initiating and approving body
Trends	See discussion below	See discussion below

Technological advances have produced trends which have to be considered significant to energy and government facility sitings in the future. The practical application of research, primarily produced by the Natural Energy Laboratory of Hawaii, enables cold seawater pumped from depths below 2000' to be used to air condition buildings.[11] As this technology is utilized in new developments, support facilities will be placed in the coastal zone and environmental protection conditions will be necessary to accommodate them. In addition, the availability of such a technology may cause development locations to gravitate toward the coastal area.

No new energy plants are planned during the next 5 years in Hawaii.

Conclusion:

1. Priority needs in this area include: development and applying performance measure indicators, development of proper control regulations for the pumping of seawater for air conditioning; increased enforcement capability for monitoring such installations; energy conservation.

2. Priority:

Last Assessment	This Assessment
High_____	High_____
Medium____	Medium_____
Low ● _____	Low ● _____

National Coastal Management Performance Measurement System (NCMPMS)

In 2005, The Office of Planning, the lead agency for the administration of the CZM program in Hawaii, engaged a consultant to begin the development of methodologies in the first two enhancement areas to enable the application of NCMPMS indicators to CZM programs and activities in Hawaii.

Development and Application of Performance Measure Strategies

Strategic Objectives: To enable Hawaii's CZM program to develop performance measures applicable to the nature of its CZM program in order to provide quantitative and qualitative indicators of the effectiveness and efficiency of the programs' strategies, projects, activities and expenditures in conformance with the concept of NCMPMS.

[11] Utilized in the construction of new medical school facilities, University of Hawaii on Oahu in 2004

The following strategies are provided for this area to be addressed by the state during the period 2006-2010. The strategies are provided in the form of summaries of program "changes" and program "continuations." End-document summary tables shows the sequence, implementation elements, scheduling and projected cost of each priority program

Program Continuations:

1. See individual enhancement area strategies for developing and implementing performance measures by which to quantitatively and qualitatively evaluate the effectiveness and efficiency of CZM programs, strategies, projects, activities and expenditures. Such efforts would be programmed as follows: 1st year - focus on the development of specific measures in the categories of "Public Access" and "Government Coordination and Decision Making," 2nd year – "Coastal Habitats" and "Coastal Water Quality", and the 3rd year – "Coastal Hazards" and "Coastal Dependent Uses and Community Development."

End Note:

1. U.S. Environmental Protection Agency; U.S. Department of Agriculture-Natural Resources Conservation Service; Hawaii State Department of Health; Hawaii State Department of Land and Natural Resources; Hawaii State Department of Business, Economic Development and Tourism-Coastal Zone Management Program; National Oceanographic and Atmospheric Administration; U.S. Fish & Wildlife Service; U.S. Geological Survey

Section 309 Strategies, 2006-2010, Implementation Elements, Schedule and Estimates Costs

Enhancement Area – Coastal Hazards

Year / Cost	Strategic Program Continuations, Program Changes, Implementation Elements, Schedule and Costs
Year 1 Budget $ 0	• Pursue statutory amendment to the definition of "shoreline" in order to insure shoreline locations are at the "highest reach of the waves" : OP testimony and justification : MACZAC testimony • Pursue changes in the methodologies utilized by counties in determining the shoreline setback in order to recognize and consider coastal erosion rates • Pursue stricter adherence to shoreline setback regulations by permit issuing authorities
Year 2 Budget $ 0	• If necessary, pursue statutory amendment to the definition of "shoreline" in order to insure shoreline locations are at the "highest reach the waves" • Pursue changes in the methodologies utilized by counties in determining the shoreline setback in order to recognize and consider coastal erosion rates
Year 3 07/01/08 –06/30/09 Budget- $ 50,000	• Develop and apply performance measure indicators by which to quantitatively and qualitatively evaluate efficacy of strategies in the area of "Coastal Hazards"
Year 4* 07/01/09 – 06/30/10 Budget- $ 2,000 Budget- $ 2,000 Total Budget $ 4,000	• Promote next phase of SMA permit process strengthening and streamlining* : Outline findings of *Final Assessment Report-SMA Permit System Project,11/04/05* and disseminate to county decision-makers • Produce publications, press-kit materials and media releases on developments b from the above pursuits*
Year 5* 07/01/10 – 06/30/11 Budget - 4,000 Budget - $25,000 Budget- $ 1,000 Total Budget -$30,000	• Continue next phase of SMA permit process strengthening and streamlining* : Promote legislative passage of amendments • Continue to assist tsunami research on the probability of tsunami generation from locally centered earthquakes* • Produce publications, press kit materials and media releases on developments from the above pursuits*
Total 5-year Budget - Coastal Hazards = $100,000 * Potential strategies if budget savings occur: **Red text = Program Changes; Black text = program Continuations**	

Section 309 Strategies, 2006 –2010, Implementation Elements. Schedule and Costs

Enhancement Area – Ocean Resources

Year / Cost	Strategic Program Continuations, Program Changes ,Implementation Elements, Schedule and Costs
Year 1 07/01/06 –06/30/07 Budgeted in FY2005 Budget – FY 2006 $ 0	• Pursue preparation and completion of an updated Ocean Resources Management Plan (ORMP) for Hawaii : Assume lead responsibility for updating plan : Submit work plan to 2006 legislature ; Prepare draft updated plan • Submit updated ORMP to the legislature : Brief other agencies on justification : Brief Governor on justification : Provide OP and MACZAC testimony
Year 2 07/01/07- 06/30/08 Budget $ 50,000	• Develop and apply performance measures in the area of "Coastal Habitats" by which to quantitatively and qualitatively evaluate the efficacy of CZM programs, projects, activities and efforts in conformance with NCMPMS.
Year 3 07/01/08-06/30/09	
Year 4 07/01/09-06/30/10	
Year 5 07/01/10-06/30/11	
Total 5-year Budget – Ocean Resources = $ 50,000 Black text = Program Continuations	

Section 309 Strategies, 2006-2010, Implementation Elements, Schedule and Estimated Costs
Enhancement Area – Special Area Management Plans

Year / Cost	Strategic Program Changes, Program Continuations, Implementation Elements, Schedule and Costs
Year 1 07/01/06-06-30/07 Budget $ 50,000	• Develop and apply performance measures in the area of "Government Coordination and Decision Making" by which to quantitatively and qualitatively evaluate the efficacy of CZM programs, projects, activities and efforts in conformance with NCMPMS.
Year 2 07/01/07-06/30/08	
Year 3 07/01/08-06/30/09 Budget - $ 50,000	• Develop and apply performance measures in the area of "Coastal Dependent uses and Community Development" by which to quantitatively and qualitatively evaluate the efficacy of CZM programs, projects, activities and efforts in conformance with NCMPMS.
Year 4* 07/01/09-06/30/10	
Year 5 07/01/10-06/30/11	
Total 5-year Budget – Special Area Management Plans = $100,000 - Black text = Program Continuations	

Section 309 Strategies, 2006-2010, Implementation Elements, Schedule and Estimated Costs

Enhancement Area – Cumulative and Secondary Impacts

Year / Cost	Strategic Program Continuations, Program Changes, Implementation Elements, Schedule and Costs
Year 1 07/01/06-06/30/07 Budgeted in FY2005 Budget - $ 75,000	• Complete Wai'anae Moku Management Framework project • Pursue the definition of guiding ahupua'a principles for the establishment and operational scope of watershed/ahupua'a management structures, including the statutory/regulatory basis to support their application. Consult with relevant stakeholders. Conduct scoping meetings and develop scope of work.
Year 2 07/01/07-06/30/08 Budget - $ 75,000	• Phase I - Establishment of an operational watershed/ahupua'a management structure using, for example, the Wai'anae Moku Framework : Select pilot ahupua'a project : Conduct baseline studies : Begin to incorporate ahupua'a principles, low impact design and rural best management practices.
Year 3 07/01/08-06/30/09 Budget - $ 50,000 Budget - $75,000 Total Budget $125,000	• Develop and apply performance measures in the area of "Coastal Water Quality" by which to quantitatively and qualitatively evaluate the efficacy of CZM programs, projects, activities and efforts in conformance with NCMPMS • Phase II - Establishment of watershed/ahupua'a management structures for improved impact management : Introduce low impact development principles and rural BMPs into ahupua'a's management structure where applicable : Graphically illustrate application of these principles and BMPs to ahupua'a, e.g. maps design charettes. : Coordinate with government agencies, interest groups and public
Year 4 07/01/09-06/30/10 Budget - $175,000	• Phase III – Establishment of watershed/ahupua'a management structure for improved impact management : Identify administrative and regulatory changes necessary to implement recommendations : Meet with State, County and Federal Agencies regarding the application and integration of ahupua'a principles, low impact design and rural BMP's into practices, rules, and regulations.
Year 5 07/01/10-06/30/11 Budget - $ 175,000	• Create second operational watershed/ahupua'a management structure : Select second pilot ahupua'a : Conduct baseline, studies, apply low impact development principles and rural BMPs (Phases I, II and III) : Establish operational management structure to improve impact management
Total 5-year Budget - Cumulative and Secondary Impacts = $625,000- Red text = Program Changes; Black text = Program Continuations	

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Section 309 Strategies, 2006-2010 – Implementation Elements, Schedule and Estimated Costs

Enhancement Area – Public Access

Year / Cost	Strategic Program Continuations, Program Changes, Implementation Elements, Schedule and Costs
Year 1 07/01/06-06/30/07 Budget - $ 50,000	• Develop and apply performance measures in the area of "Public Access" by which to quantitatively and qualitatively evaluate the efficacy of CZM programs, projects, activities and efforts in conformance with NCMPMS•
Year 2 07/01/07-06/30/08	
Year 3 07/01/08-06/30/09	
Year 4* O7/01/09-06/30/10	
Year 5* 07/01/10-06/30/11	
Total 5-year Budget – Public Access = $50,000; Black text = Program Continuations	

Section 309 – Assessment and Strategy 2006-2010, Budget Summary by Enhancement Area and Fiscal Year

Enhancement Area	Fiscal Year 2006-07	Fiscal Year 2007-08	Fiscal Year 2008-09	Fiscal Year 2009-10	Fiscal Year 2010-11	5 –Year Totals
Coastal Hazards	0	0	$ 50,000	0	0	$ 50,000
Ocean Resources	0	$ 50,000	0	0	0	$ 50,000
Special Area Management Planning	$ 50,000	0	$ 50,000	0	0	$ 100,000
Cumulative & Secondary Impacts	$ 75,000	$ 125,000	$ 75,000	$ 175,000	$ 175,000	$ 625,000
Public Access	$ 50,000	0	0	0	0	$ 50,000
Fiscal Years Totals	$ 175,000	$ 175,000	$ 175,000	$ 175,000	$ 175,000	$ **875,000**

The above budget summary reflects the policy decision of CZM Hawaii to prioritize the development of performance measures in six areas as follows:

First Fiscal Year - “Public Access” and “Government Coordination and Decision Making”

Second Fiscal Year - “Coastal Habitats” and “Coastal Water Quality”

Third Fiscal Year - “Coastal Hazards” and “Coastal dependent Uses and Community Development”